

Popular evolutionary psychology in the UK: an unusual case of science in the media?

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This paper presents findings from quantitative analyses of UK press and print media coverage of evolutionary psychology during the 1990s. It argues that evolutionary psychology presents an interesting case for studies of science in the media in several different ways. Firstly, press coverage of evolutionary psychology was found to be closely linked with the publications of popular books on the subject. Secondly, when compared to coverage of other subjects, a higher proportion of academics and authors wrote about evolutionary psychology in the press, contributing to the development of a scientific controversy in the public domain. Finally, it was found that evolutionary psychology coverage appeared in different areas of the daily press, and was rarely written about by specialist science journalists. The possible reasons for these features are then explored, including the boom in popular science publishing during the 1990s, evolutionary psychology's status as a new subject of study and discussion, and the nature of the subject itself as theoretically based and with a human, 'everyday' subject matter.

Keywords: evolutionary psychology; content analysis; UK newspapers; popular science; popular science books

1. Introduction

In recent years, our understanding of the relationship between academic and popular communication in the sciences has undergone something of a revolution. Models underlying research on science communication; popular science; and the 'public understanding' of science have undergone a process of critique and reassessment. What has been described variously as the 'canonical', 'dissemination' or 'deficit' model of relations between science and the public domain has been argued to be problematic on empirical, theoretical and political grounds (Cooter & Pumphrey, 1994; Dornan, 1990; Hilgartner, 1990). In particular, canonical accounts of science communication, memorably described by Cooter and Pumphrey as a series of 'watery analogies' of the popularization of science, assume that (scientific) knowledge is produced in a 'pure' form by scientists and is then communicated 'down' to the public by the media in a necessarily simplified, debased form. An extension of this logic can be seen in the idea that science is *only* popularized in the mass media once it has become well established, uncontroversial knowledge in academia. Research in this area has shown that, in fact, there have been many occasions where this has not been the case. For example, popular science may play an active role in the constitution of knowledge, where new and controversial science appears in the mass media before it has done in academic fora such as journals or conferences, or where scientific controversies appear in the public domain (e.g. Clemens, 1985; Lewenstein, 1995). Crucially, the existence and recognition of such counter-examples highlights the limitations of the canonical account, but does

not, however, imply that *all* public communication of science occurs in the same way. Instead, as Massimiano Bucchi (1996; 1998) has argued, much routine science communication does occur in a 'popularization' mode, moving from academia to the public domain via the mass media, and becoming increasingly well established and uncontroversial as it does so.¹ However, at the same time, there are occasions when this does not happen, which he characterizes as 'deviation processes' in science communication. These tend to occur when specific political, social or institutional pressures require scientists and other actors to circumvent the routinized processes of science communication in order to act in the public domain. Such episodes are therefore of interest because they can help to shed light on such pressures, as well as on how and why the sciences, media and publics interact in our society.

Evolutionary psychology (EP) is an emerging research area seeking to investigate the role of evolutionary pressures in modern human behavior. It combines theoretical concepts from evolutionary biology and cognitive psychology alongside empirical approaches from a variety of social science disciplines. During the mid and late 1990s, evolutionary psychology became prominent in the UK media, with practitioners, supporters and opponents of EP writing popular books and articles on the subject, giving interviews and appearing on radio and television to argue their case. Many of the claims of evolutionary psychology were highly controversial, particularly when they were concerned with the evolutionary basis of differences between men and women. These have included arguments that adultery; monogamy; rape; child abuse; the glass ceiling; and what (heterosexual) men and women find attractive in a partner all have their origins in our evolutionary history. Unlike many scientific controversies, arguments about EP have not been confined to the pages of scholarly journals and academic conference proceedings, but have also occurred in mass media forms such as popular science books and newspaper articles. This means that instead of the picture of scientific consensus and certainty painted by much popular science, one of the most notable, and indeed newsworthy, features of EP has been the controversial and uncertain nature of its knowledge claims and practitioners.² In addition, 'evolutionary psychology' has become a new label for what may be an emerging field of research, specific theoretical approach, or indeed catch-all term for Darwinian approaches to humans, according to point of view. Proponents of evolutionary psychology often argue it is a specific approach stressing the importance of psychological processes and gene level selection, (see, e.g., Cosmides and Tooby, 1997; Hagen, 2004). However, in popular and media discussions, the term 'evolutionary psychology' was often used interchangeably with several others, including sociobiology, Darwinian psychology, and simply 'Darwinism'.³

It first appeared in the academic literature in 1989; and in the UK media during 1994, in conjunction with the publication of a popular book about 'the new science of evolutionary psychology' (Cosmides and Tooby, 1989; Wright, 1994; 1995).⁴ This seemingly short interval between the appearance of EP in the academic and popular domains raises questions about the precise relationship between the two, especially

when considering that the first popular book to discuss evolutionary psychology, although less explicitly, was published in 1991 (Cronin, 1991). This is the first of several features which suggest that popular evolutionary psychology may have been undergoing trajectories other than the routine 'popularization' mode of communication described above.

The public nature of controversy about evolutionary psychology is in fact the first of several issues that make it interesting as a research topic for studies of popular science and science communication. Claims made by evolutionary psychologists, such as the idea that rape is an evolutionary adaptation to help men pass on their genes (Thornhill and Palmer, 2000), tend not only to be contested in terms of academic science, but are also highly controversial in political and social terms, keying in as they do to many contemporary concerns of gender politics, such as monogamy, adultery and divorce; or the nature of work in and outside of the home. Many evolutionary psychologists share a strongly hostile and critical stance towards other, more established 'experts' in these areas. This is frequently aimed at 'mainstream' social science positions, often characterized by evolutionary psychologists as the 'Standard Social Science Model' (SSSM), which supposedly ignores the influences of biology and evolution on human behavior (Tooby & Cosmides, 1992; Pinker, 1998). However, such hostility has not been confined to traditional, solidly academic experts such as these, has also been directed at 'radical feminists', 'Marxists' and more practical experts such as social workers and rape crisis support workers. As such, much of the popular debate over EP has been framed as a discussion about social, rather than natural, scientific expertise. This has included significant contributions from many non-academic experts, such as popular science writers, columnists and novelists (e.g. Angier, 1999; McEwan, 1997; Ridley, 1993). As such, media coverage of evolutionary psychology also provides an interesting case study in that it can broaden the traditionally tight focus of much science communication research (on the physical and biomedical sciences) to address public discussions of the social and human sciences.⁵

Therefore, popular evolutionary psychology can be examined to see how its status as a new, controversial science, largely about people and relationships, may have affected who, where or how it was covered by the media. It has appeared throughout the UK mass media, in television, radio, online and print media forms, but within this distribution, certain kinds of media sites, tending towards the elite end of the market, have given the subject a disproportionate amount of attention. Over the period under study, important sites for popular evolutionary psychology were the national broadsheet press; upmarket news magazines such as the *Times Higher Education Supplement*, *Economist* and *New Statesman*; Radio 4, particularly on discussion programmes such as Melvyn Bragg's *In Our Time*; popular science books such as Steven Pinker's *How the Mind Works* (1998); public lectures and debates; and one-off television documentary series such as Channel 4's *Anatomy of Desire* (1997) and BBC1's *Human Instinct*, presented by Lord Robert Winston (2001). To give a flavour of these

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discussions, a selection of headlines and bylines from the newspaper coverage of EP are reproduced below:

"Wild Oats? Irresistible. Good news for the rake and the temptress, bad news for the moral majority and Victorian values: adultery is genetic. Infidelity is as natural as eating or sleeping, according to a new book." Kate Muir (*The Times*, 23rd August 1994)

"Symmetry drives women wild, but lopsided lovers are losers" Roger Highfield, Science Editor (*Daily Telegraph*, 29th April 1995)

"Bout of gymnastics with evolution's psychologists: Maggie Gee is intoxicated by a study of our thought, feeling and behaviour. How the Mind Works, Steven Pinker" (*Daily Telegraph*, 10th January 1998)

'A mind to love' Steven Pinker (*Guardian*, 17th January 1998)

"How is it for you? The new wave of evolutionists think they know what man, the natural-born Casanova, and woman, the eternal monogamist, really, really want. But look around you. It ain't necessarily so." Natalie Angier (*Guardian*, 20th March 1999)

Of the media sites covering EP, the print media have been most dominant and consistent, and provided the most plausible option for collecting consistent quantitative data within the time available. In particular, CD-ROM database archives of UK broadsheet newspapers made it possible to directly compare EP coverage with a similar, but more conventionally established area of science, which also has a nonhuman subject matter.⁶ Although the findings and conclusions based on press sources alone cannot be directly transferred to other media forms such as television, they can be taken to be broadly indicative of wider trends in the media, not least because studies have shown that the science content of different media tends not to vary a great deal (Bauer, Durant, Ragnarsdottir & Rudolfsdottir, 1995; vol. II, p14; Hansen & Dickenson, 1992). To broaden the scope of the overall analysis, discussions of evolutionary psychology in other, non-print forms of media were drawn upon in subsequent qualitative work, which built upon the initial research discussed here.

2. Samples and methods

Two quantitative analyses were carried out: an initial, quite restricted exploration of newspaper archive content from CD-ROMs for 'evolutionary psychology' (Study 1), and a more wide-ranging content analysis, which also included material from other print media sources, such as news magazines (Study 2). These were carried out as part of a larger research project on popular EP, which examined issues such as public controversy, gender politics and expertise about people through qualitative analysis of media coverage and interviews with academics and media professionals involved in the area. Findings from this second, qualitative stage of the project will be reported upon in forthcoming publications (e.g. Cassidy, in press).

The quantitative analyses were between them designed to ask several questions about the UK media coverage of EP:

- How much, when, where, and by whom was evolutionary psychology discussed in the print media?
- What were the major themes of these discussions, and what attitudes were expressed toward EP claims?
- How did this relate to academic discussions of EP over the same time period?
- What was the relationship between press coverage and the publication of popular science books on the subject?
- Were there differences between patterns of coverage found for EP those for other sciences?

Study 1

In many quantitative studies of the press, a major problem can be drawing a small enough to be manageable, but also sufficiently representative, sample of articles for analysis. However, levels of coverage for EP were relatively low and the major problem was instead to find the maximum amount of material to include in the analysis. As an initial approach, the CD-ROM archives of the British daily and Sunday broadsheet newspapers were simply searched for occurrences of the phrase 'evolutionary psychology', with the following data being recorded:⁷

- the newspaper, month and year of publication
- the location within the paper (main/news; science supplement; weekday supplement; weekend supplement; column or comment; letters)
- the type of author (science journalist; other journalist; academic/book author; reader).

This process was then repeated for several terms closely related to 'evolutionary psychology' and for authors associated with the field. Most importantly, a comparison was made with articles mentioning both 'evolved' and 'genetic', which I considered to

be a fairly representative 'science' search string.⁸ This comparison search was chosen as one which tended to turn up stories about biosciences closely related to EP, such as evolutionary biology and genetics, as well as producing levels of coverage that were broadly comparable to EP and, therefore, also manageable for data collection purposes. A further comparison was provided by the search term 'Darwinian', which is a word used in both evolutionary contexts and in generalized language (often as a synonym for intense competition). This provided a picture of the timescales, locations and authorship of press articles mentioning EP; related terms; popular authors; and a comparative 'science' subject.

Study 2

However, this elicited a relatively crude picture of EP in the press for several reasons. To start with, a database search for 'evolutionary psychology' will not obtain all press discussion of the subject, because many writers avoided using the label and instead used broader terms like 'Darwinian', or instead referred to specific authors, academics, or pieces of research. The above process relied simply on recording frequencies from database searches, rather than addressing the content of the articles in any depth. Finally, CD-ROM searches excluded all coverage in the other print media, including news and popular science magazines. To overcome these problems, a more extensive sample of EP articles, this time in paper form, was also collected in order to carry out a simple content analysis of the print media coverage (Krippendorff, 1980; Weber, 1990). The core of this sample was obtained while collecting the CD-ROM data, as it is possible to save articles from the databases as text files. All articles judged to *specifically* mention EP research, ideas or academics/authors, were collected, excluding any unrelated discussions, broader evolutionary themes and extraneous material such as weekly book bestseller lists.⁹ This material was then added to articles collected from other UK print media sources on an ongoing basis over the period 1998-2000, including those obtained from online archives and from the Yahoo 'evolutionary-psychology' email discussion list.¹⁰

This sample of material, comprising 458 articles, was then subjected to a content analysis involving assessment of every article in printed form. Each article was coded for the following features:

- article date, and publication name
- type of article (research/news report; column; review; feature; letter)
- length of article (under 500 words; 500-1000; above 1000 words)
- tone of discussion (promoting EP; accepting; skeptical; opposing)
- primary and secondary content themes (biological determinism; Darwinism/evolution in a wider sense; gender politics; sexuality; science in culture)¹¹

Between them, these two analyses yielded data which have given a fairly comprehensive picture of when, where and how evolutionary psychology was covered by the broadsheet press in the UK, as well as providing direct comparisons between this coverage and that of other, related, subjects over the same time period.

3. Parameters of UK press coverage of evolutionary psychology

Timescales and trends

Figure 1 illustrates the frequency of UK broadsheet press articles mentioning EP, from 1990 to 2002, as found by CD-ROM searches for the phrase, alongside similar frequencies for sociobiology. It shows changes in levels of coverage, with no occurrences at all before 1994 and three peaks in coverage, in 1995, 1998 and 2000. Usage of the phrase built slowly at first, and then more quickly after 1998, reaching a high point in the year 2000 and then dropping off afterwards. These data also show that sociobiology was being discussed at low but consistent levels before the term 'evolutionary psychology' entered the public domain. Interestingly, the new label does not seem to supersede the old one, but instead prompts a slight increase in usage of 'sociobiology', which then stabilizes at a slightly higher but consistent level of discussion.

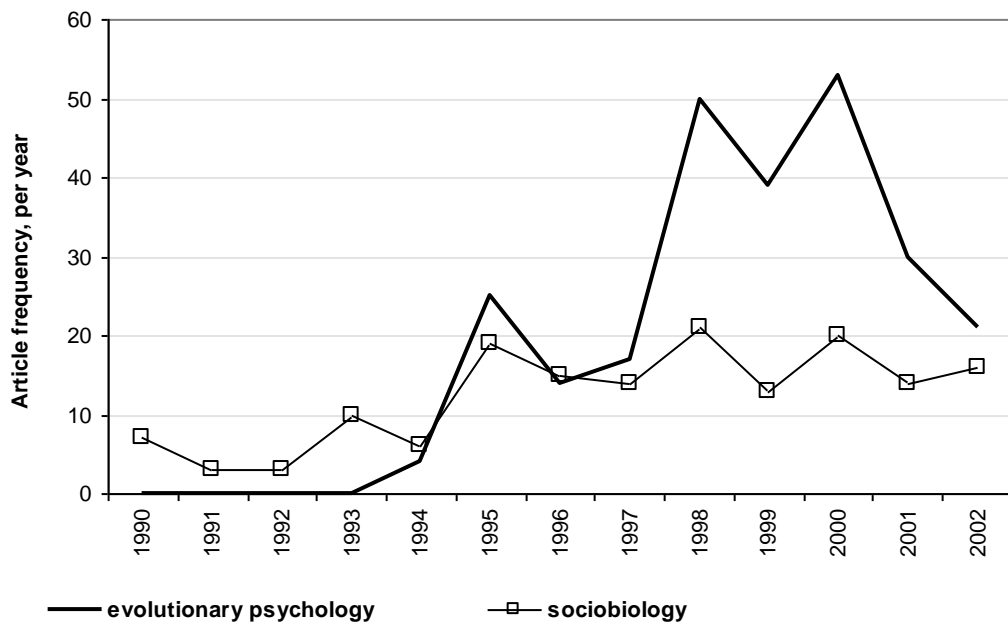


Figure 1: Yearly frequency of newspaper articles including the terms 'evolutionary psychology' and 'sociobiology' (CD-ROM data)

These raw frequencies do not control for any underlying changes in the number of articles published in newspapers each year. Considering the well known expansions in the size of the UK broadsheet press during the 1990s, this potentially presents a serious problem for the analysis. However, if the curve for 'evolutionary psychology' is indexed against a database search for a neutral word (house), we can see that the shape of the curve is broadly unchanged.¹²

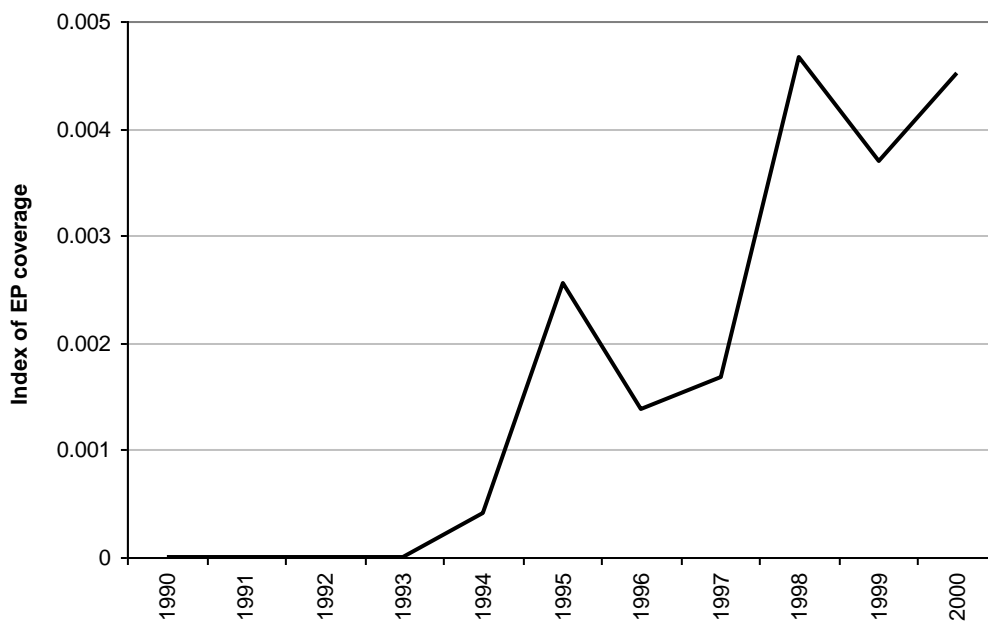


Figure 2: Evolutionary psychology coverage indexed against database hits for 'house' (*Guardian* CD-ROM archive, 1990-2000)

In order to put the trends found for EP coverage into a broader context, they are compared in Figure 3 with frequencies for a number of related terms: 'Darwinian', 'Darwinism' and 'genetic'. The broad trends for EP coverage are reflected in those for 'Darwinian' and 'Darwinism' as well, increasing in line with it and peaking in 1998-2000 before declining. The curve for 'genetic', plotted against the right axis on this graph, had frequencies of discussion almost an order of magnitude higher, illustrating well how comparatively small the overall levels of discussion about EP actually were. Again, the wider trend of consistent increase over the 1990s, followed by a drop can be seen with 'genetic'. In this case, the trend is almost certainly related to coverage associated with the Human Genome Project, which reported the completion of its 'first draft' in the year 2000, in a blaze of publicity. Although this post-2000 drop is still too recent to be confirmed as a consistent or long term trend, a recent analysis of UK press coverage of biotechnology research also reported a similar pattern, with steady increases in reporting reaching a peak in 1999 and followed by a fall in coverage levels (Gaskell et al, 2003). Informal monitoring of the media coverage around EP and genetics since 2002

certainly suggests that this drop has been sustained, with markedly less discussion occurring in comparison to the late 1990s. This suggests that evolutionary psychology may have been aided in obtaining press coverage by the wider atmosphere of positivity and even 'hype' surrounding biotechnology, genomics and genetics during the late 1990s, especially considering common associations between evolutionary and genetic causation of human behavior.

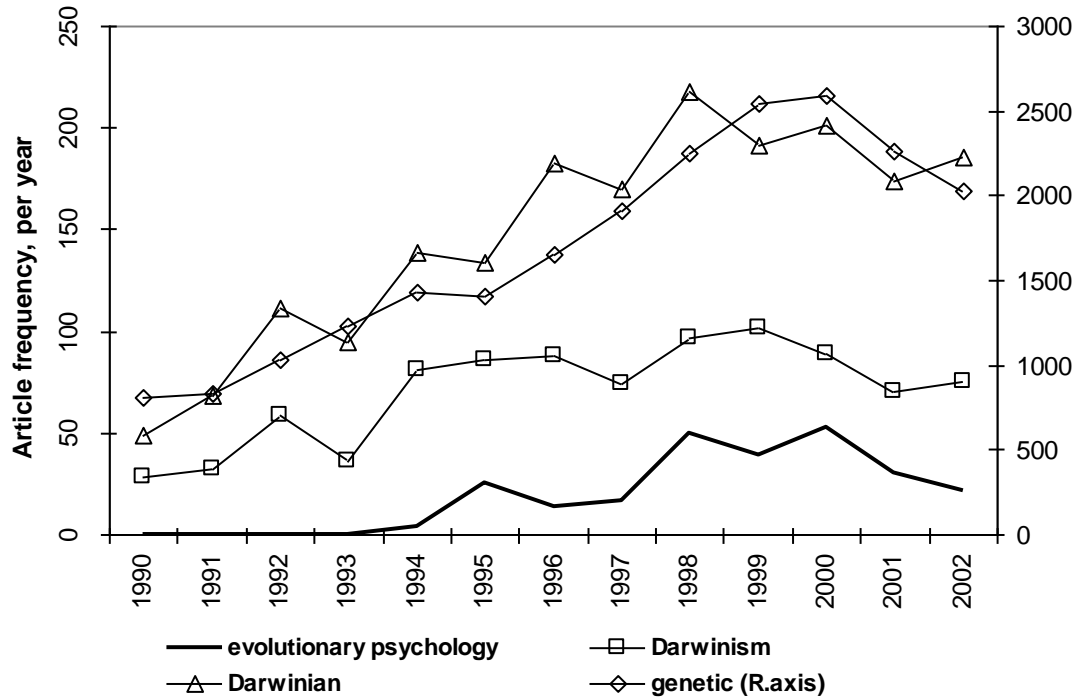


Figure 3: Yearly frequency of articles including 'evolutionary psychology', 'Darwinian', 'Darwinism' and 'genetic' (CD-ROM data)

In order to gain a clearer idea of the relationships between mass media and academic discussion of EP, levels of UK press coverage were also compared with rates of articles mentioning EP, from two major bibliographic databases, the ISI's *Science, Social Science* and *Arts and Humanities* indices; and the American Psychological Association's *Psychinfo* database. Figure 4 shows that trends in press and academic discussion largely mirrored one another through most of the 1990s, while academic citations for EP started to rise sharply *after* the appearance of the subject in mass media in 1994. Another interesting feature is that while levels of press discussion dropped after the year 2000, those in academia continued to rise. Although these findings give no indication about the nature of these academic discussions, whether citations were positive or negative, or to what extent the subject was regarded as established, to an extent such concerns are irrelevant. Most importantly, prior to the first appearances of EP in the public domain, the label was very rarely used in the academic literature, whilst after the media discussions of the 1990s, usage has increased vastly and is continuing to do so. It could be argued that this is simply due to increasing levels of academic discussion being disseminated to the popular press. However, if this was the case, then why do the two appear concurrently, and why does press coverage drop away while academic discussion continues to rise? The relationship between popular and academic discussion of evolutionary psychology will be explored in greater depth later in the paper.

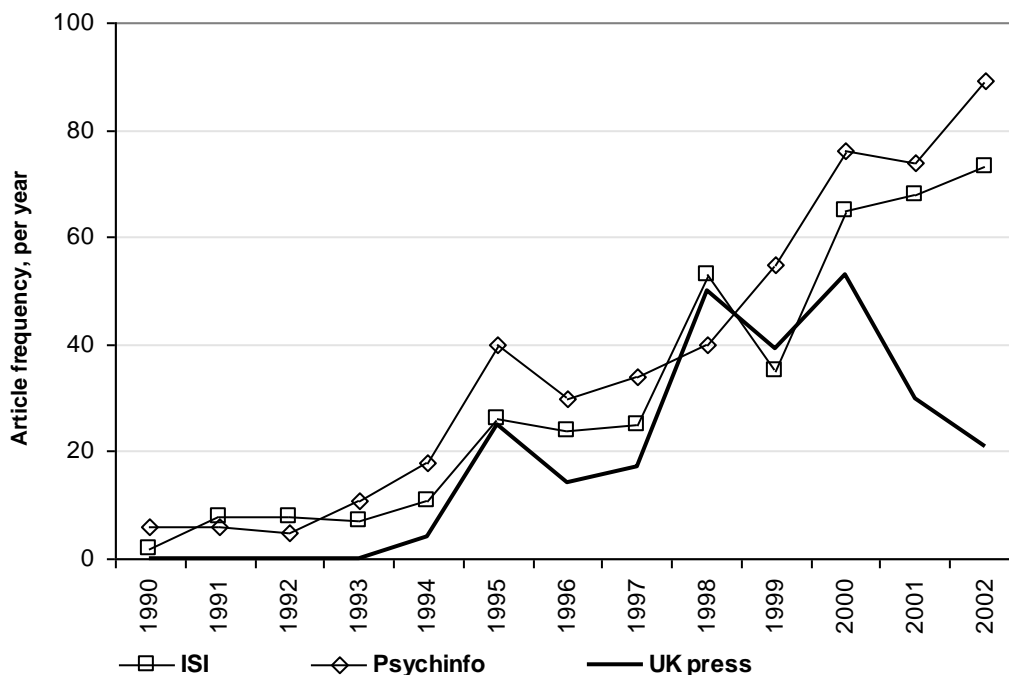


Figure 4: Yearly frequency of EP articles: academic citation databases and UK broadsheet press

Location and content of evolutionary psychology coverage

Within the UK print media, it can be problematic to accurately establish where EP has appeared most. This is because tabloid newspapers and news magazines tend not to have comprehensive computerized archives, and the exploratory nature of this research did not allow time or resources for detailed searching through physical archives of such publications. This meant that searches could be backdated prior to 1998, for some publications and not others, with this being more likely for broadsheet newspapers and upmarket magazines such as the *Economist*. I collected non-archive material from 1998 on an ongoing basis, but there is the distinct possibility of a bias in my data collection towards material from sources that had electronic archives. However, the overall sample of collected material confirms the impression that most EP appeared in the broadsheet press, news magazines, and 'crossover' publications with both academic and 'lay' audiences such as the *Times Higher Educational Supplement*. The wide appearance of EP in other 'elite' media sites such as Radio 4, 'popular science' publishing and Channel Four goes some way towards supporting this claim.¹³ The CD-ROM survey faced none of these limitations, as it looked only at broadsheet newspapers with computerized archives. It can therefore be examined to explore the distribution of EP coverage within the UK broadsheet press, shown in Figure 5. This is of particular interest because of the differing associations that evolutionary arguments about humans have had with particular political positions. Sociobiology in the 1970s and Social Darwinism earlier in the twentieth century were both popularly associated with right wing politics. In recent years, opponents of EP have frequently traced its associations with the Right and the conservative implications of its claims (e.g. Rose & Rose, 2000). However, as the graph clearly shows, the most important sites for discussion of EP in the 1990s were in fact the centre-left rather than the centre-right press.¹⁴

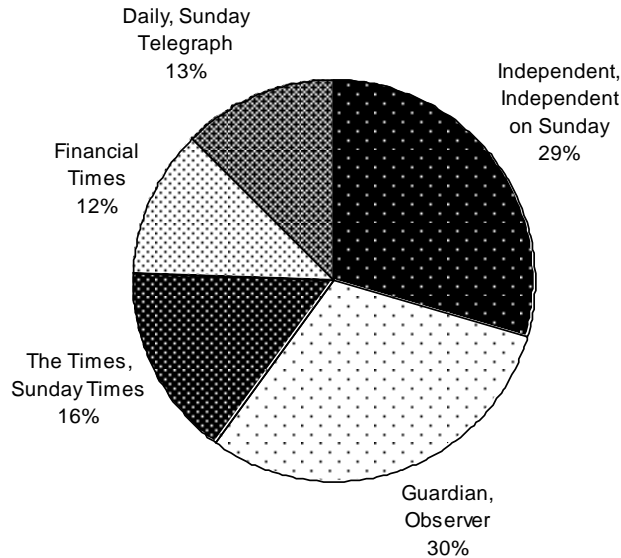


Figure 5: Distribution of evolutionary psychology coverage, UK broadsheet press: 1992 - 2001

As described above (Study 2), in order to provide an assessment of the kinds of issues discussed in the print media in relation to EP, five coding categories were constructed, based upon the most frequently covered themes:

- sex (sexuality, sexual behavior or sexual attraction)
- gender (gender politics, such as the social roles of men and women)¹⁵
- determinism (biological determinism, free will, possibilities of social change)
- Darwinism (wider discussion of Darwinian authors, controversy or influence of evolutionary ideas in/on culture)
- science in society (relationship of science to society, public understanding and communication of science)
- other (specific discussions unrelated to any of the above)

The articles collected for the print content analysis were then coded according to these categories for both 'primary' and any 'secondary' themes of discussion in the text (defined above). Figure 6 shows the distribution of these themes in print media coverage of EP. These findings confirm initial impressions that media coverage of EP was dominated by the links between evolution, sexuality and gender politics. This reflects media news values, whereby stories about sex, with 'human interest' or relevance are seen by journalists and editors as being appealing to audiences, making them more likely to be published (see, e.g. Gregory and Miller, 1998; p110-14). However, themes of Darwinism and determinism were also prominent, particularly as secondary threads within an article primarily 'about' another topic. This may reflect

wider concerns about such issues, where EP provides an easy way 'in' to more complex discussions and concerns, such as the genetic determination of behavior.

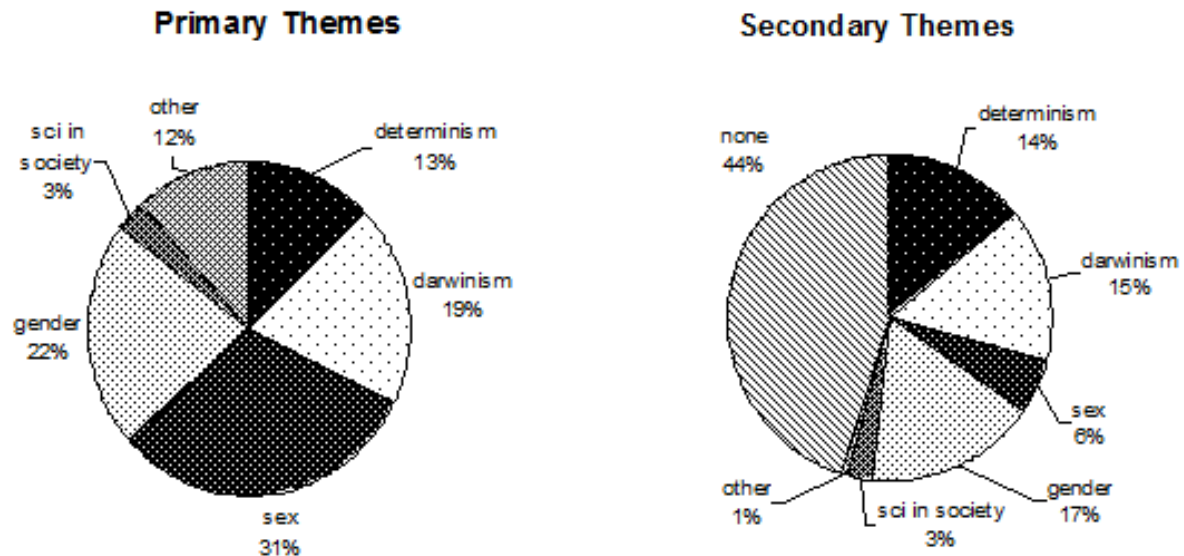


Figure 6: Distribution of primary and secondary themes in print media coverage of EP

Trends in EP coverage

The content analysis also allows for the breakdown of the recorded data in order to show trends over time. Where such trends are found, they can help to show how the coverage of EP developed and changed over the 1990s. Figure 7 shows the changes in the length of articles over the 1990s. There was a definite trend towards increasing length of articles, with the proportion of articles over 1000 words increasing from 20% in 1992/93 to 40% in the year 2000.

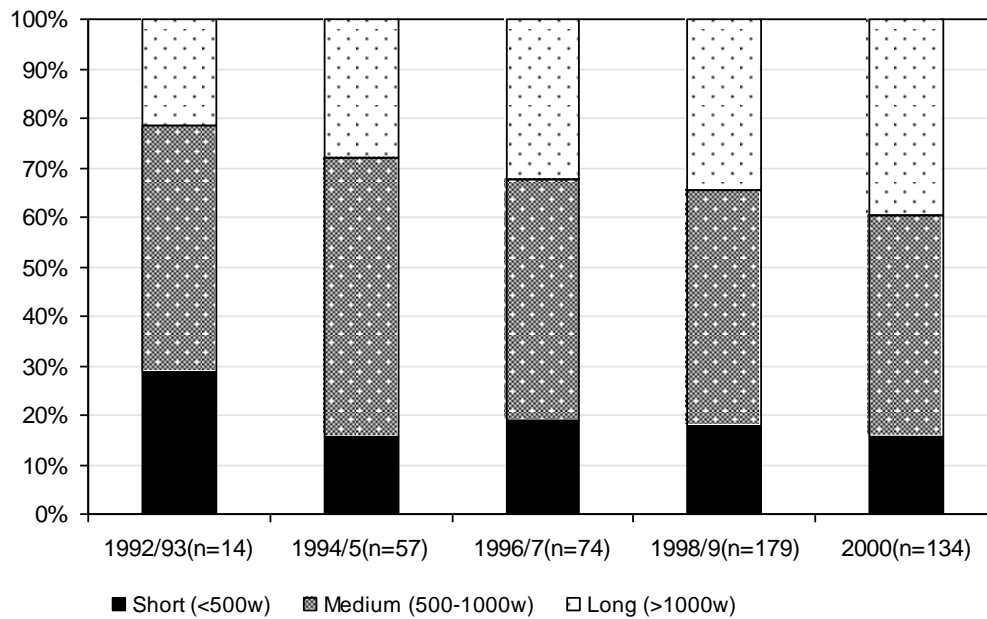


Figure 7: Changes in the length of EP articles over time (UK print media)

As shown in Figure 8, the tone of coverage, in terms of the attitudes expressed towards EP, also changed dramatically over the 1990s. The material was coded into four categories: (i) actively positive about or promoting EP; (ii) EP claims reported in a neutral, unchallenging or mildly positive manner; (iii) skeptical towards EP; and (iv) actively opposed to or directly challenging EP claims. In the earliest appearances of the subject, press coverage was overwhelmingly positive, with very little dissension or challenge to the claims made. However, by the end of the 1990s, the coverage was equally divided between positive and negative views about EP.

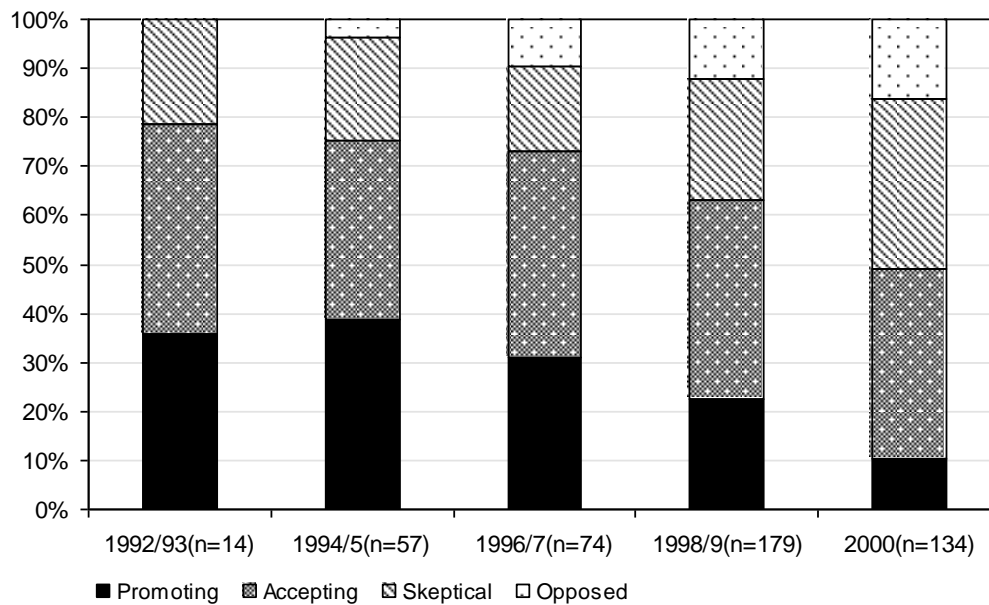


Figure 8: Changes in tone of EP articles over time (UK print media)

Together, these changes in the length and evaluative tone of articles about evolutionary psychology are indicative of a developing atmosphere of *debate* over the claims made by evolutionary psychologists. In the early/mid 1990s, evolutionary psychologists were making claims directly in the media, which were also being reported in a fairly straightforward manner. However, after a few years these claims became familiar enough to be taken up and examined at a greater, more critical depth, in part as a means of providing a 'new angle' on the topic, but also as other, critical, academic voices mobilized and made themselves heard. It could be argued that more space was required for articles covering the topic, simply in order to cover the increasingly complex issues and diversity of views about evolutionary psychology.

To sum up, these data paint a picture of a subject that came to the attention of the UK press in the early/mid 1990s, became prominent over the next five years or so, and then dropped in visibility at the end of the decade. Academic citations for EP suggest that, at least in part, public discussion of the subject in the media may have boosted recognition, or at least promoted discussion of it in academia. Within the press, more coverage of EP occurred in the centre-left rather than centre-right broadsheets, and this coverage was dominated by discussions of the implications of evolutionary psychology for issues of sexuality and gender politics. Finally, content analysis has shown that print media articles about EP steadily increased in length, whilst gradually becoming more skeptical of the claims made by evolutionary psychologists. However, these data tell us nothing about how EP came to be covered by the media in the first place.

4. The press and popular science publishing: co-option and co-operation across the media

As described by several researchers and authors in studies of science and mass communication, an important factor (or 'news value') determining whether a media site will cover a particular story is its presence in other parts of the media, or co-operation between two or more organizations (Gregory & Miller, 1998). These are known as the news values of co-option and co-operation, and in this way, many aspects of media coverage can become almost self-generating and highly self-referential. An obvious example is the way in which newspapers pick up stories from one another, once an initial story has been 'broken' in the public domain by a single report. Another example is the routine co-operation seen between book publishing and other media forms, especially newspapers. In this case, the publication of books provides content for other media in the form of reviews, interviews with authors and occasionally news, whilst publishers gain from such co-operation in getting free public exposure and publicity for their books.

Over the 1990s, there were approximately 25 popular or semi-popular books published in the UK specifically about EP or on closely related evolutionary themes.¹⁶ In fact, the earliest mentions of 'evolutionary psychology' in the press, in 1994 and 1995, were largely in the context of discussing a book published at that time, Robert Wright's *The Moral Animal: The New Science of Evolutionary Psychology* (1994; 1995). Most of these popular books were also written about in the UK press, not only in terms of direct coverage about the books, but also through reporting on the authors and their activities (e.g. when authors were involved in public lectures and debates). In terms of such public appearances, the activities of the Darwin@LSE group during the mid 1990s were particularly important. Located at the London School of Economics' Centre for Philosophy of Natural and Social Science, Darwin@LSE ran several series of public lectures and meetings on evolutionary themes between 1995 and 1998. Many of these lectures were given by prominent EP authors such as Steven Pinker, Robin Dunbar and Matt Ridley. They were well attended by journalists, academics, and novelists, and received prominent coverage, particularly in the broadsheet press and on Radio 4. In addition, they co-operated closely with publishers, both in co-promoting book publications and the lectures, and in producing a series of short popular science books, *Darwinism Today*.¹⁷ All of this was occurring during the middle of a boom in popular science publishing in the UK, providing a general atmosphere in which such books, and the activities of their authors, were seen as fashionable and of great commercial potential (e.g. Nixon, 1991; Rodgers, 1992).

However, although the general relationship between publishing and other media coverage is well recognized, to my knowledge no research studies have addressed it in any detail. Furthermore, a close examination of EP coverage in the light of book publishing can seek to answer questions of how important this relationship has been for the public image of this science. To what extent has publishing books on the subject

created and maintained the prominence of EP in the public domain? A good way of examining this is to compare detailed trends in levels of press coverage for EP itself with trends in coverage of the authors of these books. Such a method is most suitable for the earlier part of the period under study, when publications of EP books were relatively widely spaced. Towards the end of the 1990s and the beginning of this decade, the sheer number of book publications and diversity of actors engaged in the debate was such that the picture became too complex to easily discern any such relationships. However, close examination of the mid-1990s suggests that two books in particular played an important role in creating press coverage for EP.

1994 – 1995: Robert Wright

The author of the book introducing 'evolutionary psychology' to the UK public and media was an American science writer and freelance journalist, Robert Wright, who then and now often writes in US liberal news magazines such as the *New Republic*. *The Moral Animal: The New Science of Evolutionary Psychology* was published in the US in 1994 and in the UK in 1995. All of the earliest press articles found in CD-ROM searches for 'evolutionary psychology' turned out to be coverage of this book or brief mentions of its author in the context of another discussion. As was seen in Figure 1, the first major peak for press coverage of evolutionary psychology occurred in 1995. A more detailed examination of the data from CD-ROM archives over this period, as shown in Figure 9, reveals that during 1994 and 1995, newspaper coverage of EP, and of the author Robert Wright, were very closely associated: when EP peaked, Wright peaked and *vice versa*. This happened in August 1994 (*The Moral Animal* was published in the US at this time), then again in April and May 1995 (the UK publication was in April), and again in July 1995. This strongly suggests that during 1994 and 1995, UK press coverage about evolutionary psychology was closely linked with that of *The Moral Animal*.

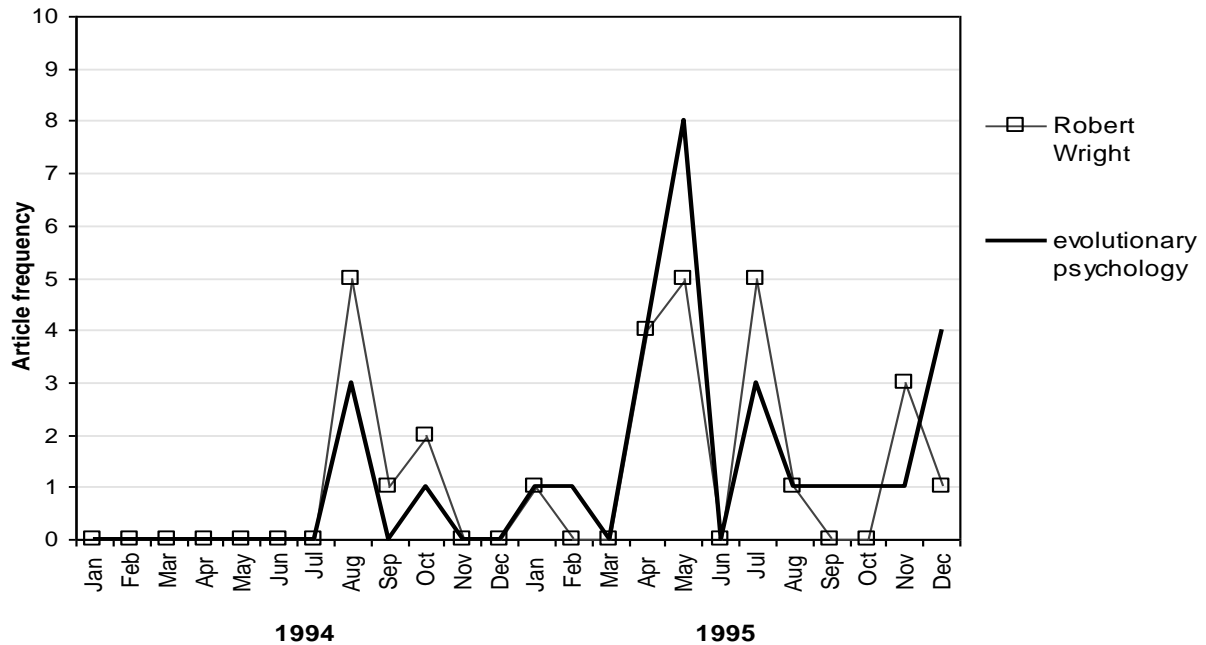


Figure 9: Frequency of EP articles with that for author Robert Wright (CD-ROM data)

1998 – 1999: Steven Pinker

Steven Pinker is an American cognitive and linguistic psychologist who has, to date, written four popular books, published in the UK in 1994, 1998, 1999 and 2002. The 1994 book was titled *The Language Instinct*, and advanced the argument that our facility for language is an innate, evolved feature of human beings. *The Language Instinct* is evolutionary in its approach and does mention EP by name towards the end of the book. However, it was published in the UK before *The Moral Animal* introduced the term 'evolutionary psychology' to the UK press. *The Language Instinct* does not mention EP on the book jacket or blurb, and was generally discussed in the press as a book about language, rather than one about evolution. As was seen in Figure 1, the second major peak in press coverage of EP occurred in 1998, which was the year that Pinker's second book, *How The Mind Works*, was published. *How The Mind Works* explicitly mobilized arguments in favor of the evolutionary psychology approach to studying the human mind and attacked other approaches in the social sciences. It was explicitly identified as such in press releases, interviews with the author, and in most of the press coverage about the book.

Figure 10 shows the period from June 1997 to June 1999 in detail, illustrating an association between mentions of EP and those of Steven Pinker. *How the Mind Works* had a highly professional publicity campaign organized around it and received a

phenomenal amount of coverage in the media as a whole (for a science book). As well as book reviews,¹⁸ this coverage included many other articles about both book and author. Pinker came to Britain when his book was published in January 1998, and conducted many interviews, book signings, radio appearances and public lectures. This is reflected in Figure 10, with coverage for Pinker starting to rise in December 1997 as pre-publication publicity came through, and EP following it in January 1998 (when the book was published) and the frequency of both terms falling again over the next two months. Coverage for both terms rose again in the middle of 1998, perhaps because the book became a bestseller, which would in turn generate further coverage. Finally, in February 1999, the paperback version of the book was published, resulting in a corresponding peak in coverage for Pinker. Press coverage of EP also rose at this time, reaching a peak in March 1999. This time, *How The Mind Works* may have contributed to the press coverage, but its contribution would have been alongside the publication of several other books on the subject around this time, as described earlier. Pinker's next book, *Words and Rules*, was published in October 1999, but as the title suggests, this was concerned specifically with linguistics and the study of grammar and proved to be a smaller, lower key book. His 2002 book, *The Blank Slate* was published too recently to be within the scope of this analysis; however, this book was again an overt promotion of the EP viewpoint, this time attacking 'social science' and 'leftist' ideas of human nature as a 'blank slate'. Informal monitoring of the media from 2001 has given me the impression of a similar spike in coverage, albeit not as widespread or visible as that surrounding the publication of *How The Mind Works*.



Figure 10: Frequency of EP articles with that for author Steven Pinker (CD-ROM data)

Although this method cannot provide firm evidence that the publication of any book has had anything to do with press coverage of EP, the analysis shown here is strongly suggestive of links between press coverage of books and of EP at specific times during the 1990s. This was particularly visible with the first books to prominently use the term 'evolutionary psychology' and with a very widely promoted and covered book on the subject several years later. The way that these CD-ROM databases are put together provides reliable and easily comparable data, which is not reliant upon researcher judgments, although it also means that a statistical analysis for correlation is not possible.¹⁹ However, my first-hand familiarity with this material strongly suggests that these links are real, not only for these two books but also for others, although these links are difficult to establish using quantitative methods. Such an analysis can only *suggest* relationships between EP coverage and the publication of books and certainly cannot assume that coverage of either of these books was *solely* responsible for media coverage of EP. Furthermore, to quote the often repeated (but often ignored) adage, 'correlation does not imply causation': these data cannot tell us anything about whether the book publications are promoting discussion of EP, discussion of EP is promoting the books, or even a mixture of the two. However, they do establish that a close relationship existed over at least part of the 1990s. In particular, the pronounced effects of publishers' and authors' promotional activities put media coverage of this and perhaps other sciences into a new perspective, by highlighting the ways in which such groups can actively create media coverage of science, rather than it being simply 'picked up' by the activities of journalists.

Considering the suggestion discussed above in Section 3, Figure 4, that the relationship between academic and press discussion of EP is not a straightforward 'diffusion' one, these data about relationships between press coverage and popular evolutionary psychology books raise an intriguing prospect. Are these popular books influencing academic research and discussion of evolutionary psychology? One way of checking this would be to run searches through the ISI database for articles which cite these popular books over the period in question. Figure 11 shows citation rates for Pinker's *How The Mind Works*; Wright's *Moral Animal*; and several other popular books on similar themes published during the 1990s (Cronin, 1991; Dunbar, 1996; Ridley, 1993). In particular, the recent publication date and high citation rates for *How The Mind Works* strongly suggest it is proving to be strongly influential in academia. I also ran citation searches for Richard Dawkins' *The Selfish Gene* and Stephen Hawking's *A Brief History of Time*, although the much earlier publication dates of these 'popular science classics' precludes the chance of direct comparisons with the EP books of the 1990s. Interestingly, *A Brief History of Time* had 296 citations between 1990 and 2002; but *The Selfish Gene* had 1696 citations, reflecting its hugely influential status not only as popular science, but also as important theoretical work in evolutionary biology.

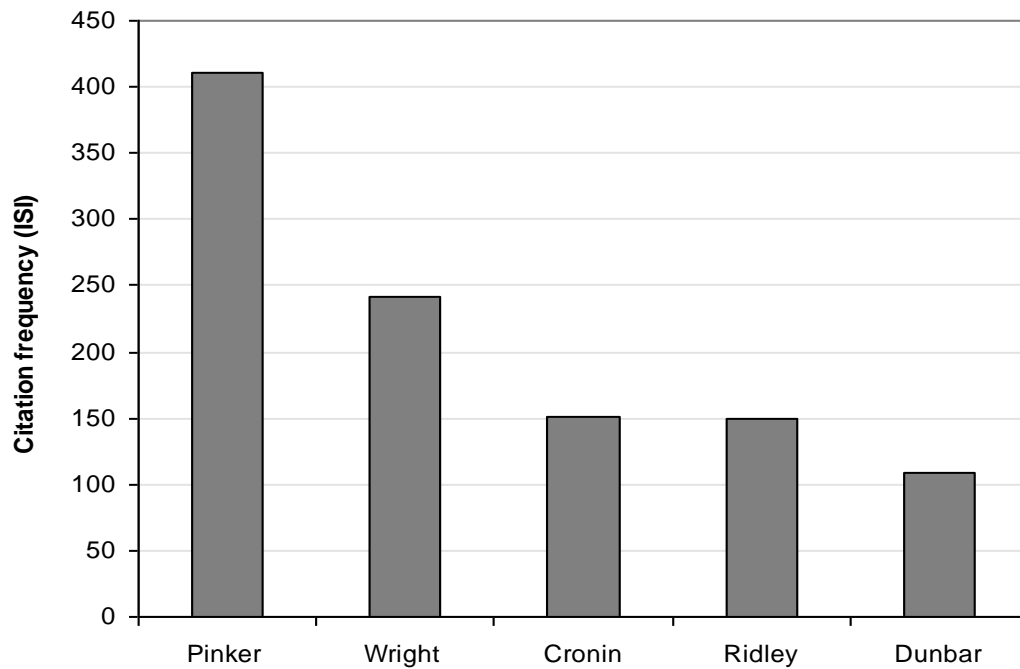


Figure 11: Citation rates for EP popular science books (ISI, all indices)

5. Comparisons with other science coverage

As described earlier, after working with the UK media coverage of EP for a relatively short time, I gained the impression that this subject was being covered in a very different pattern to other sciences. Because of this, one of the questions that this research set out to answer was whether the press treatment of EP was actually different to that seen for the other sciences. Although they have provided a generalized picture of science coverage in the media, as news, or as specifically 'science' features, content analyses have tended not to publish findings on where *within* a particular media form science appears, or what type of coverage this might involve. For example, in a major content analysis of science in the UK press, Martin Bauer and his colleagues reported that from the 1950s to the 1990s, "the proportion of feature articles remains fairly stable at around a fifth of all [science] articles", but gave no further details on what other types of articles were written about science, or where they might be published (Bauer et al, 1995; vol. I, p27). A recent study by Hargreaves, Lewis and Spears (2002) reported that between 11% and 21% of press coverage of scientific topics takes the form of columns, but again gives no further details. In a similar manner, research has tended to focus exclusively on science journalists, and give little indication of how much coverage of science comes from generalists or other specialist journalists (such as technology or education correspondents). There are also methodological problems with comparing studies of science in the media, as very often different definitions of 'science' are used (does 'science' include all research activities, social science, medicine, or only the natural sciences?), as well as different publications, timeframes and measures of

location or type of coverage. Therefore, such studies and figures as do exist will be used simply to contextualize the findings of this research, rather than to provide direct comparisons.

The database format of press CD-ROM archives makes it possible to directly compare EP coverage with that of other subjects, and to do this for the specific period under study. Rather than trying to compare EP coverage with some kind of idealized notion of 'science' coverage, it was instead compared with a particular example of science, as well as with a term that could be representative of a more generalized pattern of press coverage. After trying out several alternatives, the terms 'evolved and genetic' and 'Darwinian' were settled upon, as providing reasonably comparable subject matter and coverage levels to EP. Data on the location and authorship of articles including the terms 'evolutionary psychology', 'evolved + genetic' and 'Darwinian' were therefore collected, providing an internally valid and consistent way of comparing press coverage of different subjects.

Locations of articles

Figure 12 shows locations within newspapers of articles using these phrases, displayed as a percentage to adjust for differences in sample sizes. The distribution for 'evolved + genetic' bears out the generalized picture of where science appears in newspapers, with about half of the coverage located in either the main news or specialist science sections of newspapers, and the rest split between supplements and commentary pieces. This is strikingly different to the pattern seen for 'evolutionary psychology', where news and science articles take up only 17% of the overall coverage. Instead, nearly two-thirds of evolutionary psychology coverage appeared in either weekday or weekend supplements,²⁰ with most of the rest of the coverage taken up by commentary pieces. Finally, the distributions for 'evolutionary psychology' and for 'Darwinian' are very similar. 'Darwinian' is a word often used when EP, evolutionary biology or related disciplines are discussed, but is also used more generally in the press (particularly in financial and business coverage) as a synonym for intense competition. This similarity between distributions for the two terms suggests that EP is covered by the press in a pattern closer to that for more generalized press coverage, rather than that seen for other sciences.

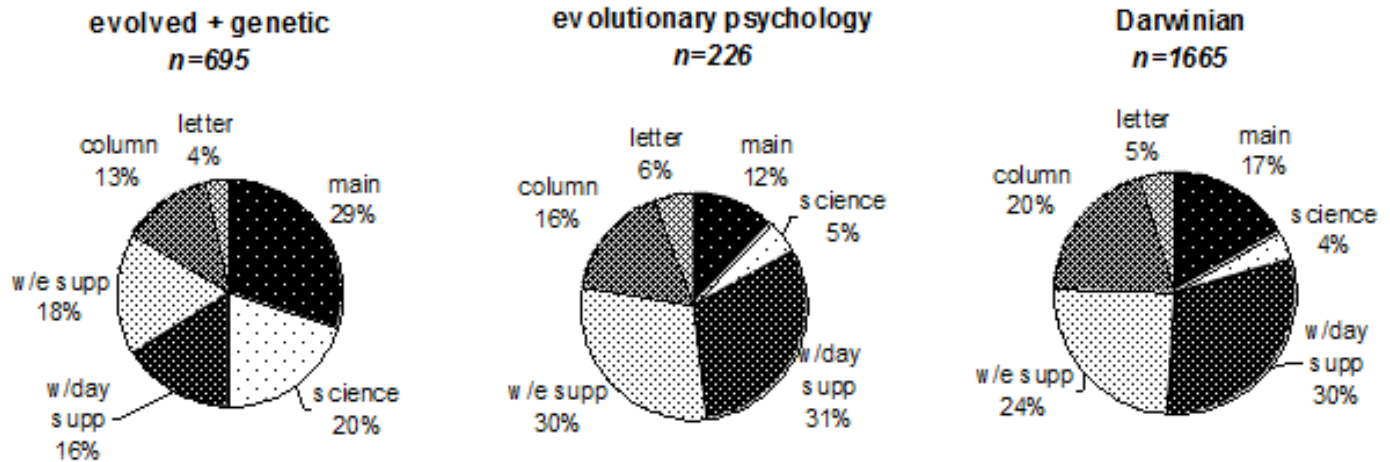


Figure 12: Locations of articles in newspapers, 1990-2001 (CD-ROM data)

Authors of articles

Figure 13 shows the distributions of author types for newspaper articles that include the search phrases. The distribution shown for 'evolved + genetic' confirms the basic assumption that much of press coverage of the sciences is written by science journalists. However, it also shows that (at least for this specific topic), over half of coverage is not written by science journalists, but by non-specialist journalists, authors and academics. This finding in and of itself raises questions about the tendency for studies of science and the media to concentrate on the working practices and attitudes of specialist science journalists to the exclusion of all others (Dunwoody, 1986a; Hansen, 1994). These data show an even more dramatic contrast between 'evolved + genetic' and 'evolutionary psychology' articles, where only 10% of the EP coverage was written by science journalists, and more than half by generalists or specialists in other subjects. In addition, a third of the EP coverage was written by academics, authors and public figures who were not full-time professional journalists. Unlike with the locations of EP articles, the authorship pattern was also very different to that seen for articles including the term 'Darwinian', with substantially more academics and authors writing about EP

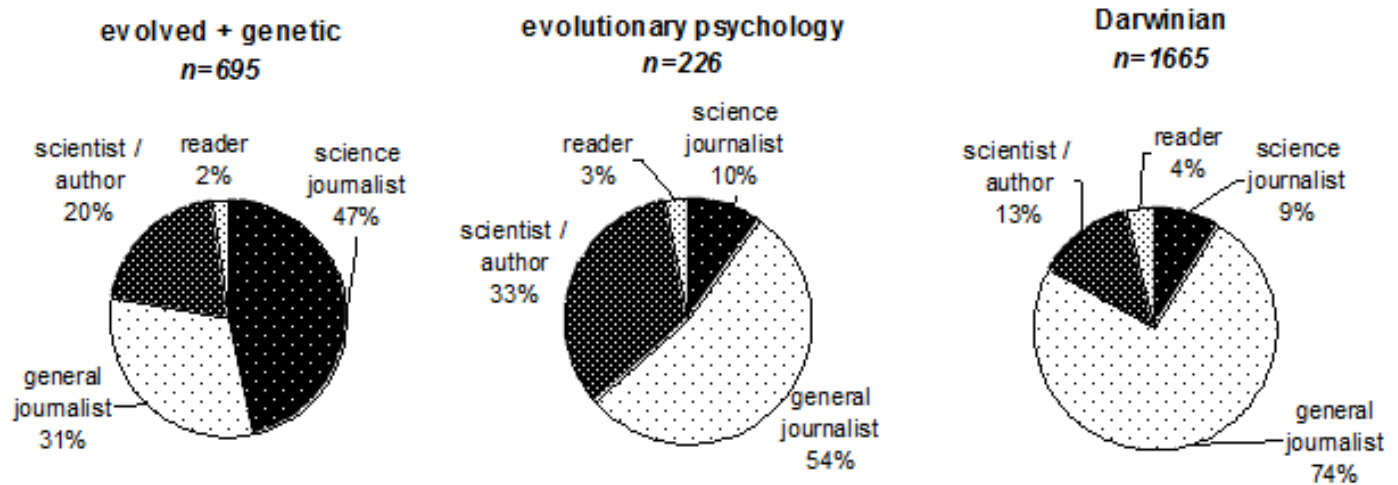


Figure 13: Article author types, 1990-2001 (CD-ROM data)

These findings also suggest that EP was being treated differently by the press, principally through the reduced contributions of science journalists and the much greater involvement of other groups and individuals. This difference had two major aspects to it: (i) the higher proportion of contributions from generalist journalists and specialists from other 'beats' (such as social affairs) suggests that EP was frequently falling into these remits, rather than into a specifically 'science' one; and (ii) the much greater involvement of academics and authors in writing about EP. This latter aspect is, however, suggestive of a slightly different influence. It is likely that the contributions from academics and authors reflect the influence of publishing on press coverage in general, particularly through them reviewing one another's books. However, the increased levels of articles about EP authored by this group suggest that books were of *particular* importance in the press coverage of this subject. Books also provided academics and authors with a means of intervening more directly in the media by giving interviews and writing in-depth articles and opinion pieces based around their own or each other's books.

6. Discussion

In this paper, I have presented findings from quantitative analyses of UK print media coverage of EP during the 1990s. The label 'evolutionary psychology' first appeared in 1994, in conjunction with the publication of a popular science book on the subject, (Robert Wright's *The Moral Animal*), and increased in visibility through the rest of the 1990s (Fig. 1). Usage of the phrase fell off after the year 2000 and, although it is too early to tell if this will be a continuing trend, it is matched by usage trends for other evolutionary and biological phrases, including 'genetic' (Figs. 2 & 3), and by recent data on UK press coverage of biotechnology (Gaskell et al, 2003). Although this study cannot really comment on the reasons behind these changes, it is noted with interest that

Gaskell and colleagues also report that increases in press coverage of biotechnology were associated with a more negative evaluative tone. Evolutionary psychology is in many respects quite a different subject to biotechnology, but both areas do draw upon the findings and increased visibility of genetics and related sciences in the public domain, especially through the 1990s (Bauer, 1998). The current study has also found that evaluations of EP became less positive as the overall amount of coverage increased (Fig 8), and it may be that for such subjects, increased amounts of coverage is particularly associated with controversy. However, without further investigation, no real conclusions can be drawn about how and why such links might exist. On the whole, UK media coverage of EP was dominated by up-market, elite locations such as Channel Four, Radio 4, news magazines and, most importantly, broadsheet newspapers. Within the broadsheet press, the majority of coverage was in the politically more left wing newspapers, probably reflecting the congruence of evolutionary psychology arguments with shifts in the US/UK political landscape during the 1990s (Fig. 5). Perhaps unsurprisingly, coverage of EP focused strongly upon issues of sexuality and gender politics, although other important themes included biological determinism and the widening influence of Darwinism in culture (Fig. 6). The presence of EP in a wide variety of elite media forms, rather than specifically in newspapers, suggests that it successfully became a recognized part of mainstream intellectual culture in the UK of the 1990s, often discussed alongside the implications of advances in biology, as well as gender and sexual politics.

Examination of the data obtained from broadsheet press CD-ROM archives revealed a close correspondence between mentions of 'evolutionary psychology' and certain popular science authors. As well as introducing EP into the public domain in the UK, press coverage of EP and of Robert Wright's *The Moral Animal* were very closely associated through most of 1994 and 1995, as the book was published in the US, the UK and was issued as a paperback in the UK over this period (Fig. 9). Similarly, coverage mentioning the American psychologist Steven Pinker was found to be associated with coverage of EP during 1998 and 1999, a period when Pinker's book *How The Mind Works* was published in hardback and then paperback, and was the subject of a highly successful publicity campaign run by the publisher of the book (Fig. 10). Although such links between publishing and press coverage are not in and of themselves unusual, the linkage of such a specific and, crucially, new academic subject with the publication of popular books raises issues of the relationship between 'academic' and 'popular' discussions of the sciences. The earliest academic citations using the specific phrase 'evolutionary psychology' date back to 1989 (Cosmides and Tooby, 1989), and, as can be seen in Figure 4, remained at rates of less than ten a year up until 1994, the year that Robert Wright's book was published. It was only after this time that citation rates began to rise sharply, following roughly similar trends to press discussion through the rest of the 1990s. Crucially, although levels of press discussion fell off sharply after the year 2000, academic citations have continued to rise. Furthermore, increased levels of contributions in the press from academics and authors about evolutionary psychology (Fig. 12), combined with the indications of an increased atmosphere of debate about EP

through the 1990s (Figs. 7 & 8), are also strongly suggestive that something unusual is going on.

As discussed in the Introduction, canonical understandings of science communication as exclusively involving the dissemination of knowledge from 'science' to 'the public' via 'the media' have been strongly critiqued in recent years. However, there are aspects of the canonical account which *do* describe routine aspects of science in the public domain, for example, in the routine ways in which much scientific knowledge is generally 'popularized' in simpler, less uncertain and less controversial forms, via communication professionals such as science journalists. In order to sidestep this contradiction, I have adopted Bucchi's (1996) distinction between routine 'popularization' and the more unusual 'deviation' trajectory in public communication of the sciences. I would argue that the evidence presented here may indicate that popular EP provides a good example of 'deviation' in the public communication of the sciences. This becomes particularly apparent when considering the increased presence of academic and authors writing about EP in the press. This increased presence implies that evolutionary psychologists and their opponents were often arguing their positions *themselves* in the press and other media. This idea is backed up by their visibility in other media at the time, such as radio and public lectures and debates, and of course through popular science books.

Several other researchers have also traced links between the appearance of popular or 'public science', and the establishment of legitimacy for, and boundaries within and around the sciences (Gieryn, 1999; Turner, 1980; 1993). They argue that exposure in the public domain may, at times, help individuals or groups make arguments or achieve visibility in a way otherwise not possible in more specialized communication forms. In the early 1990s, EP was (and perhaps still is) a new, controversial subject, located at the intersection of many scientific boundaries (such as those between the natural and social sciences, or between 'popularized' and 'academic' science). This also suggests strongly that popular EP may provide a good example of deviation in science communication. However, the issues of evolutionary psychology's academic status and location on scientific boundaries are enormously complex, and be explored in forthcoming work, which draws upon qualitative material to develop these themes in greater depth. On the whole, these findings certainly call into question canonical understandings of the 'popularization' of science, where academic discussions are seen as *always* disseminating down into the popular domain, with no importance or effects in or on academia. In the EP case, it seems possible that popular discussions may have helped to stimulate academic interest and discussion of the subject. At the very least, these findings suggest a more complex and intertwined relationship between the academic and popular domains than is often acknowledged. It is also quite likely that this case is reflective of recent changes in the culture of academia in the UK, where today it is more acceptable and desirable for scientists to 'engage' with the public. As such, there may well be other recent examples where new sciences undertake this kind of deviation trajectory in their public communication.

Finally, this paper has presented findings indicating that media discussion of EP may have been unusual in other, quite different, ways. Investigations of where in newspapers EP was discussed revealed a very different pattern to that seen for a comparable 'science' subject. Instead of receiving most coverage as news or in science supplements, discussions of EP largely appeared as 'features' material in weekday or weekend supplements, or in columns (Fig. 11). In addition, it was found that science journalists were writing a much smaller proportion of the coverage of EP than they were about a comparable science topic. The majority of press coverage was actually provided by generalist journalists and specialists in other areas, such as 'social affairs' correspondents (Fig. 12). There are several possible factors behind this second pattern of differences in EP coverage, none of which are mutually exclusive. Most immediately, parallels can be drawn with previous research looking at coverage of psychology and the social sciences in the US media. A major study by Weiss and Singer (1988) found that, just as with evolutionary psychology, only a small proportion (7%) of social science stories in American newspapers were written by science journalists; instead most of the coverage occurred as part of coverage 'about' other topics, such as crime or education. Furthermore, other studies have found that science journalists have a tendency to be very dismissive of the value of social science research, regarding it as 'unscientific' and uninteresting, and that science and other journalists, as well as editors, see the social sciences as subjects requiring no specialist knowledge to write about or understand. Therefore, they can be covered by anyone (Dunwoody, 1986b; Evans, 1995). Consequently, the social sciences can have trouble distinguishing their work from ordinary 'common sense' knowledge (Derksen, 1997). The label 'evolutionary psychology', as well as the topics frequently associated with it in media discussion (sexual attraction, relationships, the glass ceiling), would suggest that EP was seen similarly, and treated accordingly by the UK press as coverage 'about' any of these issues rather than as straightforward 'science' coverage.

However, such an assertion is complicated by Weiss and Singer's (1988) additional finding that, unlike EP, the social sciences were often covered by the press as *news* reports about research findings. Although the widespread presence of EP in features and column articles may in part be explained by the influence of publishing in stimulating books reviews, serializations, and author interviews, it seems unlikely that all of the extra material was of this nature. Evolutionary psychology books may also have influenced press discussions more indirectly through highlighting the ideas and theories important to the area, such as sexual selection, mate choice, gene selection and basic evolutionary theory itself. Such an emphasis on ideas cannot, almost by definition, fit into the daily news routines of newspapers, where space is strictly limited and coverage of academia largely relies upon the reporting of empirical research findings. Instead, the longer and less constricted formats of features and columns are ideally suited to discussion, speculation and debate about EP ideas. The quantitative findings presented here can only show that patterns of EP coverage were different to those for another science subject. On their own, they cannot disentangle what these differences might mean, or why they have come about. Therefore, forthcoming work will draw upon

qualitative analysis of EP in the media and interviews with academics and media professionals, to further investigate these underlying questions.

Whether EP is treated in the media as 'ideas science', as 'science about people' or not as 'science' at all, this second area of contrast with more routine patterns of science coverage has some interesting implications. For example, much research on science and the media has tended to concentrate almost exclusively on the roles of science journalists. Study of the EP case can help shed some light on the important contributions of other journalists and non-journalists, and of other media forms, such as publishing, to science coverage in the press, radio and TV. This becomes particularly important when considering what happens when particular scientific issues enter the mainstream media agenda, as happened during public controversy over BSE or genetically modified foods. The suggestion that EP and other social sciences are treated differently to the natural sciences by the media because of their human subject matter is also quite intriguing. On the one hand, such subjects may not be regarded as 'science' or accorded the same cognitive authority as natural sciences, making it much harder to maintain expertise against lay knowledge. However, the closeness of the social sciences to everyday life may also make them easier to communicate in the popular domain: certainly they fit well with media news values such as meaningfulness and relevance to daily life; they escape from the 'ghetto' of specialist science reporting; and they are widely reported areas of research across the media (Bauer et al, 1995).

7. Conclusions

In this paper, I have presented the findings of two quantitative analyses of the UK broadsheet press coverage of EP during the 1990s. I have argued that these findings provide evidence of several ways in which the UK press coverage of EP can be seen as an unusual case of science in the media. These can be broadly summed up as follows: the close relationship found between popular publishing and press coverage of EP; the presence of a scientific controversy in the public domain involving academics, authors and journalists; and newspapers' treatment of EP as a subject 'about' people, as well as one in which ideas are very important. Of these three areas, the first two may be closely connected, in that publishers and the press provide between them a powerful and mutually beneficial set of co-operative routines based around the publications of books. Evolutionary psychologists and their opponents have skillfully utilized these routines to launch their arguments and ideas into the public domain on several occasions. Although this took place in a decade when there was a boom in popular science publishing, and there may in fact have been other cases where this has happened, this is the first time that such links have been documented in any detail. In addition, the presence of a lively scientific controversy in the public domain, being fought out by academics through books, newspaper articles, interviews, radio appearances and public lectures is not a routine one, and some of the evidence presented here documents this happening. The third area in which EP coverage may have been unusual is a little more difficult to pin down, but seems to be related to the

nature of the subject as one in which ideas and theories are very important, but also as one which is reported and positions itself as fundamentally about people.

However, these suggestions can only remain as such if based solely upon the evidence presented here. Direct comparisons were only made between two subject areas and, because of the remit of the research, no attempt was made to establish any more representative figures for (for example) 'natural' or 'social' science coverage in the press. It would be very interesting to find out how issues such as subject matter, empiricism / theoretical basis, or establishment in academia affect the media coverage of research, by looking at a more comprehensive range of subjects. The quantitative data presented here can only introduce descriptive statistics about when and where the UK press covered EP, alongside similar information on the major themes of discussion and attitudes expressed therein. On their own, they cannot give much insight into what popular EP was 'really' about, why it was controversial, or indeed the reasons why the press coverage of the subject has displayed such unusual features. Because of the limitations of quantitative content analysis research for studying issues as complex and nuanced as scientific controversies, this research was carried out as a single stage in a broader research project on popular EP. This project employed a 'mixed methods' design, in which the media coverage of EP was also analyzed qualitatively and interviews with academics and media professionals were carried out (Cresswell, 2003; Evans and Hornig Priest, 1995). These later research stages were informed by the findings of the quantitative analyses, for example by stimulating discussion in interviews or by providing the basis for coding frames. Therefore they were able to investigate many of the suggestions made here in much greater depth, and their findings will provide the major material for forthcoming publications exploring these issues.

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Bibliography

- Angier, N. (1999) *Woman: an Intimate Geography*. London: Virago Press.
- Bauer, M. (1998) The medicalisation of science news: from the "rocket-scalpel" to the "gene-meteorite" complex. *Social Science Information*, 37(4), 731-51.
- Bauer, M., Durant, J., Ragnarsdottir, A. & Rudolfsdottir, A. (1995) *Science and Technology in the British Press 1946-1990: A Systematic Content Analysis Of The Press (vols. I-IV)*. London: Science Museum.
- Bucchi, M. (1996) When scientists turn to the public: alternative routes in science communication. *Public Understanding of Science*, 5, 375-94.

Final revised draft as sent to publisher. Published as: Cassidy, A. (2005) 'Popular Evolutionary Psychology in the UK: An Unusual Case of Science in the Media?' *Public Understanding of Science*, 14(2): 115-41.

- Bucchi, M. (1998) *Science and the Media: Alternative Routes in Science Communication*. London: Routledge.
- Brown, A. (1999) Origins of the Specious. *The Guardian*, November 30th 1999.
- Cassidy, A (in press) 'Evolutionary Psychology as Public Science and Boundary Work' in press, *Public Understanding of Science*.
- Clemens, E. (1985) Of asteroids and dinosaurs: the role of the press in shaping scientific debate. *Social Studies of Science*, 16, 421-56.
- Collins, H.M. (1987) Certainty and the Public Understanding of Science: Science on Television. *Social Studies of Science*, 17, 689-713.
- Cosmides, L. & Tooby, J. (1989) Evolutionary Psychology and the Generation of Culture 1: Theoretical Considerations. *Ethology and Sociobiology*, 10(1-3), 29-49.
- Cosmides, L. & Tooby, J. (1997) *Evolutionary Psychology: A Primer* [Online]. Available: <http://www.psych.ucsb.edu/research/cep/primer.html>, Santa Barbara, CA: Centre for Evolutionary Psychology, UCSB, accessed on 05/03/01.
- Cooter, R. & Pumphrey, S. (1994) Separate Spheres and Public Places: Reflections on the History of Science Popularisation and Science in Popular Culture. *History of Science*, 32, 237-267.
- Cresswell, JW (2003) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. Thousand Oaks, Calif.; London: Sage Publications
- Cronin, H (1991) *The Ant and the Peacock: altruism and sexual selection from Darwin to today*. Cambridge: Cambridge University Press.
- Derkson, M. (1997) Are We Not Experimenting Then? The Rhetorical Demarcation of Psychology and Common Sense. *Theory and Psychology*, 7(4), 435-56.
- Dornan, C. (1990) Some Problems in Conceptualising the Issue of "Science and the Media". *Critical Studies in Mass Communication*, 7, 48-71.
- Dunbar, RIM (1996) *Grooming, Gossip and the Evolution of Language*. London: Faber and Faber
- Dunwoody, S. (1986a) The Science Writing Inner Club: A Communication Link Between Science and the Lay Public. In Friedman, SL, Dunwoody, S and Rogers, CL (eds.) *Scientists and Journalists: Reporting Science as News*. (p155-69) New York: Macmillan.
- Dunwoody, S. (1986b) When Science Writers Cover the Social Sciences. In Goldstein, JH (ed.) *Reporting Science: The Case of Aggression* (p67-81) Hillsdale; NJ: Lawrence Erlbaum Associates.
- Evans, D & Zarante, O. (1999) *Introducing Evolutionary Psychology*. Cambridge: Icon Books.
- Evans, W. (1995) The Mundane and the Arcane: Prestige Media Coverage of Social and Natural Science. *Journalism and Mass Communication Quarterly*, 72(1), 168-77.
- Evans, W. and Hornig Priest, S. (1995) Science content and social context. *Public Understanding of Science*, 4, 327-40
- Freely, M. (1999) Body Battle: the origin of the female. New book pits Darwinists against feminists. *The Observer*, 21st March 1999.
- Gaskell, G., Allum, N., Bauer, M., Jackson, J.P., Howard, S. & Lindsey, N. (2003) Climate change for biotechnology? UK public opinion 1991-2002. *AgBioForum*, 6, 55-67.
- Gieryn, T.F. (1983) Boundary work in professional ideology of scientists. *American Sociological Review*, 48, 781-95.
- Gieryn, T.F. (1999) *Cultural Boundaries of Science: Credibility on the Line*. Chicago: University of Chicago Press.
- Gregory, J. & Miller, S. (1998) *Science in Public: Communication, Culture and Credibility*. New York: Plenum Trade.

Final revised draft as sent to publisher. Published as: Cassidy, A. (2005) 'Popular Evolutionary Psychology in the UK: An Unusual Case of Science in the Media?' *Public Understanding of Science*, 14(2): 115-41.

- Hagen, E. (2004) *The Evolutionary Psychology F.A.Q.* [Online]. Available: <http://www.anth.ucsb.edu/projects/human/evpsychfaq.html>, Santa Barbara, CA: Centre for Evolutionary Psychology, UCSB, accessed on 02/02/04.
- Hansen, A. (1994) Journalistic practices and science reporting in the British press. *Public Understanding of Science*, 3, 111-134.
- Hansen, A. and Dickenson, R. (1992) Science coverage in the British mass media: media output and source input. *Communication*, 17, 365-77.
- Hargreaves, I., Lewis, J. and Speers, T. (2002) *Towards a Better Map: Science, the Public and the Media* [Online]. Available: <http://www.esrc.ac.uk/esrccontent/DownloadDocs/Mapdocfinal.pdf>, Swindon: Economic and Social Research Council, accessed on 03/06/03.
- Hilgartner, S. (1990) The dominant view of popularisation, conceptual problems, political uses. *Social Studies of Science*, 20, 519-39
- Hrdy, S.B. (1999) *Mother Nature: Natural Selection and the Female of the Species*. London: Chatto and Windus.
- Jones, S. (1999) *Almost Like A Whale: 'The Origin of Species' Updated*. London: Doubleday.
- Krippendorff, K. (1980) Content Analysis: An Introduction to Its Methodology. *Sage COMMTEXT Series*, 5, Thousand Oaks, Calif.; London: Sage.
- Lewenstein, B. (1995) From fax to facts: communication in the cold fusion saga. *Social Studies of Science*, 25, 403-36.
- McEwan, I. (1997) *Enduring Love*. London: Vintage
- Miller, G. (2000) *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature*. Oxford: Heinemann.
- Myers, G. (1990) *Writing Biology: Texts in the Social Construction of Scientific Knowledge*. Madison, WI: University of Wisconsin Press.
- Nixon, W. (1991) The art of publishing popular science books: why - and how the field is flourishing. *Publisher's Weekly*, August 23rd, 1991
- Pinker, S. (1994) *The Language Instinct: The New Science of Language and Mind*. London: Allen Lane.
- Pinker, S. (1998) *How the Mind Works*. London: Allan Lane.
- Pinker, S. (1999) *Words and Rules: The Ingredients of Language*. London: Weidenfeld and Nicholson.
- Pinker, S. (2002) *The Blank Slate: The Modern Denial of Human Nature*. London: Allen Lane.
- Ridley, M. (1993) *The Red Queen: Sex and The Evolution Of Human Nature*. London: Viking.
- Rodgers, M. (1992) The Hawking phenomenon. *Public Understanding of Science*, 1, 231-34.
- Rose, H. & Rose, S. (2000) (eds.) *Alas, Poor Darwin: Arguments Against Evolutionary Psychology*. London: Jonathan Cape.
- Thornhill, R. & Palmer, C.T. (2000) *A Natural History of Rape: Biological Bases of Sexual Coercion*. Cambridge, MA; London: MIT Press.
- Tooby, J. & Cosmides, L. (1992) .The Psychological Foundations of Culture. In: Barkow, J., Cosmides, L. & Tooby, J. (eds.) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture* (p19-136). New York; Oxford: Oxford University Press.
- Turner, F.M. (1980) Public science in Britain, 1880-1919. *Isis*, 71, 589-608.
- Turner, F.M. (1993) *Contesting Cultural Authority: Essays in Victorian Intellectual Life*. Cambridge: Cambridge University Press.
- Weber, R.P. (1990) Basic content analysis (2nd edition). *Sage University Papers: Quantitative Applications in the Social Sciences*. Thousand Oaks, Calif.; London: Sage.

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Weiss, C.H. & Singer, E. (1988) *Reporting of Social Science in the National Media*. New York: Russell Sage Foundation.

Wright, R. (1994) *The Moral Animal: Evolutionary Psychology and Everyday Life*. New York: Pantheon; (1995) *The Moral Animal: The New Science of Evolutionary Psychology* London: Little, Brown.

Notes

¹ For further discussion and comparison of popular and academic science, and of their representations of the certainty of knowledge, see, e.g., Collins, (1987) and Myers (1990).

² The certainty or uncertainty of evolutionary psychology knowledge claims was itself a point of argument in the debate, but I would take the presence of a variety of views in the public domain as an indication of controversy and therefore scientific uncertainty. In addition, the controversy itself also received media coverage, see, e.g., Brown (1999); Freely (1999).

³ This paper is a study of the popular *usage* of the term 'evolutionary psychology' and would therefore seek to avoid contributing to the controversy over the meaning of the term by inferring its' meaning from the context of use. For further discussion of differences between the 'broad' and 'narrow' definitions of evolutionary psychology, see Cassidy (in press).

⁴ Robert Wright's book was published under the title *The Moral Animal: Evolutionary Psychology and Everyday Life* in the US in 1994; and *The Moral Animal: The New Science of Evolutionary Psychology* in the UK in 1995. This pattern of publications moving across the Atlantic over the period of a year is a common one in publishing, and indeed other entertainment media such as movies.

⁵ The whole issue of defining what is or is not 'science' is a notoriously fraught one (see Gieryn, 1983). Therefore, for the purposes of this discussion I will refer to 'science' in a broad sense, as academic research, including natural, medical and social sciences. Specific areas within this will be referred to as the 'natural sciences', 'social sciences', 'medical sciences', and so on.

⁶ Such electronic archives are now available in most university and some public libraries, and come in the form of databases searchable by keyword, date, year and so on. Articles stored on them come in the form of text files, which generally list the headline, byline, date, article text, page number and section. This loses valuable information such as font sizes, placement and pictures, meaning that they cannot replace a full content analysis using physical archives. However, they did provide the kind of basic data needed for this research. This research was originally conducted using CD-ROM databases, however since then technology has moved on, and UK electronic newspaper archives are now generally provided through online subscription services such as Lexis-Nexis Professional <http://web.lexis-nexis.com/professional/>.

⁷ Daily broadsheet newspapers used: *The Times*, *Telegraph*, *Financial Times*, *Guardian*, and *Independent*, while Sunday papers were the *Sunday Telegraph*, *Sunday Times*, *Independent on Sunday* and *Observer*. Although the Sunday newspapers operate independently to the dailies, they generally share an ownership and overall outlook, so were combined together for the purposes of the analysis.

⁸ Comparative terms: Darwinism, Darwinian, sociobiology, evolved, genetic. EP authors: Steven Pinker, David Buss, Robert Wright, Robin Dunbar, Richard Dawkins, Geoffrey Miller, Helena Cronin, Dylan Evans, Steven Rose, Stephen Jay Gould, Matt Ridley

⁹ Inevitably this involved a personal and subjective judgment of what constituted a discussion of 'evolutionary psychology', based on several years of researching the subject and an undergraduate training in the area.

¹⁰ This e-mail distribution list regularly posts details of new research and media reports relevant to EP, which are then commented on by list members, many of whom are academics working in the area. This list is available to members of the public, but by request only. It has been running since 1999 and at the time of writing has a little over 3,500 members, largely in the US and UK. For further information see <http://groups.yahoo.com/group/evolutionary-psychology/> and <http://human-nature.com/>.

¹¹ Article length categories were chosen to correspond roughly with three major groupings in the length of newspaper articles, according to the depth of coverage given. 'Primary' and 'secondary' themes denoted whether articles were broadly 'about' the subject, or simply mentioned it in the context of another

discussion. Due to the nature of the material obtainable from CD-ROMs, more 'standardized' coding criteria such as page number and article length in terms of space taken up on the page were unsuitable.

¹² Because of the recent obsolescence of the CD-ROM databases, only the *Guardian* CD-ROM database could be accessed in order to carry out this analysis, and this is now only available to 1990. For these reasons, raw frequencies will be used through the rest of the article, and this does unfortunately weaken some of the claims made in this article. This does also raise serious questions about the reliability of such data over longer periods of time.

¹³ Although such sites are, to an extent, traditional ones for discussion of the sciences, the very small and sporadic nature of coverage *specifically about EP* found in other areas of the media such as tabloid newspapers, popular magazines, primetime, mainstream TV and popular radio underlines the strongly elite nature of popular evolutionary psychology, and indeed of much so-called 'popular' science.

¹⁴ Unlike newspapers in many countries, UK newspapers tend to take overtly political editorial stances which can be reflected in their reporting. The *Guardian* and *Independent* are generally regarded to be on the left of this spectrum, with the *Times* and *Telegraph* on the right, with the position of the *Financial Times* being more strongly influenced by its specialist interest in business and financial reporting.

¹⁵ Distinctions made between sex and gender can be quite problematic, but in terms of mass media reporting the two tend to be treated very differently, and thus provide separate categories for this analysis.

¹⁶ Prominent examples would be the work of Steven Pinker, Matt Ridley, Robert Wright, Natalie Angier and Steven and Hilary Rose who have already been mentioned. Others would include: Robin Dunbar's *Grooming, Gossip and the Evolution of Language* (1996), Sarah Blaffer Hrdy's *Mother Nature* (1999); Evans & Zarante's *Introducing Evolutionary Psychology* (1999); Steve Jones', *Almost Like a Whale* (1999) and Geoffrey Miller's, *The Mating Mind* (2000).

¹⁷ For further information on Darwin@LSE and *Darwinism Today*, see their web page at: <http://www.lse.ac.uk/Depts/cpnss/darwin/index.htm>.

¹⁸ Many of the newspapers reviewed the book in weekday and weekend editions, as well as in the Sunday newspapers.

¹⁹ This is because the measures are not independent, meaning that at a given time, database 'hits' for 'evolutionary psychology', 'Steven Pinker' and 'Steven Rose', for example, could be from a single article, or could be three separate articles. The way that the data is held means that without examining articles one by one it is impossible to tell the difference.

²⁰ Examples would include the *Guardian's* G2 tabloid section, or the arts/reviews sections of newspapers.

Author

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